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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/517,193

12/08/2004

Shigeru Bando

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EXAMINER

MCMAHON, MARGUERITE J

ART UNIT

PAPER NUMBER

3747

MAIL DATE

DELIVERY MODE

06/18/2007

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

# Office Action Summary

Application No.

10/517,193

Applicant(s)

BANDO, SHIGERU

Examiner

Marguerite J. McMahon

Art Unit

3747

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 4-6 and 23-43 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 4-6, 23-25 and 27-42 is/are allowed.
- 6) ☒ Claim(s) 26 and 43 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- |   |  |
|---|--|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                      | 5) <input type="checkbox"/> Notice of Informal Patent Application                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date ____ | 6) <input type="checkbox"/> Other: ____  |

**DETAILED ACTION**

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 26 and 43 are rejected under 35 U.S.C. 102(b) as being anticipated by Bando (5,265,565). Note in Figure 18 a reciprocating engine comprising: first and second ring grooves disposed adjacent to each other in a reciprocating direction of a piston and formed in a side surface of said piston, said first ring groove being located between a head end face of said piston and said second ring groove in the reciprocating direction; a first piston ring 3 fitted in said first ring groove adjacent to the head end face of said piston; a second piston ring 4 fitted in said second ring groove; a partition 10 to partition a space between said first and second piston rings into a thrust side space and an anti-thrust side space; and communicating structure to allow the thrust side space to communicate with a combustion chamber defined by an inner surface of a cylinder and said head end face of said piston, said communicating structure having a communicating passage 111 provided in said inner surface of said cylinder (see column 9, last paragraph, which indicates utilization of a plurality of such passages), and being adapted to allow the thrust side space to communicate with said combustion chamber through said plurality of communicating passages when said piston is located in a vicinity of a top dead center, each said communicating passage being comprised of a

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recessed portion formed in said inner surface of said cylinder, and wherein said piston is coupled to said connecting rod using said piston pin, and said piston pin is provided in said piston such that a line connecting an axis of said piston pin and an axis of a crankshaft is inclined toward the anti-thrust side with respect to a line connecting a center of said piston and the center of said crankshaft (see Figure 13).

***Allowable Subject Matter***

Claims 4-6, 23-25, and 27-42 are allowed.

***Response to Arguments***

Applicant's arguments filed 3/19/07 have been fully considered but they are not persuasive. Applicant argues that Bando fails to show a plurality of communication passages provided in an inner surface of the cylinder, and being adapted to allow the thrust side space to communicate with the combustion chamber through the plurality of communicating passages when the piston is located in a vicinity of top dead center, each of the communicating passages being comprised of a recessed portion formed in the inner surface of the cylinder. This is incorrect. The figures of Bando show only a single communication passage 111, which is provided in an inner surface of the cylinder, and adapted to allow the thrust side space to communicate with the combustion chamber through the plurality of communicating passages when the piston is located in a vicinity of top dead center, the communicating passage being comprised of a recessed portion formed in the inner surface of the cylinder. In addition, Bando states in the last paragraph of column 9 that: "The number of such concavities or through holes as the gas passage may be one. Alternatively, more than one concavity

or hole may be provided in the inner surface 14 of the cylinder at positions shifted to each other with respect to the circumferential direction and in the direction of reciprocation of the piston 2 or at the same position." Thus, Bando does teach the utilization of a plurality of communication passages.

### ***Conclusion***

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Marguerite J. McMahon whose telephone number is 571-272-4848. The examiner can normally be reached on Monday-Wednesday and Friday, 10am-6:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steve Cronin can be reached on 571-272-4536. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Marguerite McMahon  
Primary Examiner  
Art Unit 3747